We claim:

1. A transgenic mouse, comprising a transgene, said transgene comprising a polynucleotide encoding a human tau protein operably linked to at least a portion of a regulatory region of a mouse prion gene, wherein said transgenic mouse expresses human tau protein.

2. The transgenic mouse of claim 1, wherein said human tau protein is selected from the group consisting of isoforms 352, 381, 410, 383, 412, and 441.

3. The transgenic mouse of claim 2, wherein said human tau protein is isoform 383.

4. The transgenic mouse of claim 1, wherein said human tau protein is selected from the group of mutants consisting of G272V, N279K, P301L, S305N, V337M, and R406W.

5. The transgenic mouse of claim 4, wherein said human tau protein is a V337M mutant of isoform 383.

6. The transgenic mouse of claim 2, wherein said human tau protein is further selected from the group of mutants consisting of G272V, V337M, and R406W.

7. The transgenic mouse of claim 3, wherein said human tau protein is further selected from the group of mutants consisting of N279K, P301L, and S305N.

8. The transgenic mouse of claim 2, wherein said human tau protein is mutant P332L.

9. The transgenic mouse of claim 1, wherein said human tau protein is expressed in the brain.

10. The transgenic mouse of claim 1, wherein said regulatory region comprises said prion gene promoter and 5' flanking sequence, the first *PrP* exon, the first *PrP* intron, and the initial, noncoding portion of the second *PrP* exon.

11. A model of neurodegenerative disease comprising a transgenic mouse as in any of claims 1-10.

12. The model of neurodegenerative disease of claim 11 for use in the screening of drugs to treat said disease.

13. The model of neurodegenerative disease of claim 11 for use in genetic crosses to generate models of Alzheimer's disease.

14. A method of screening for a drug that modulates hyperphosphorylation of tau comprising the steps of

a) administering the drug to a transgenic mouse, the transgenic mouse comprising a transgene, said transgene comprising a polynucleotide encoding a human tau protein operably linked to at least a portion of a regulatory region of a mouse prion gene, wherein the transgenic mouse expresses hyperphosphorylated human tau protein; and

b) comparing the state of phosphorylation of tau in a second transgenic mouse to which the drug was not administered to the state of phosphorylation of tau in the transgenic mouse to which the drug has been administered, wherein a difference in phosphorylation indicates the drug modulates hyperphosphorylation of tau.

15. A method of screening for a drug for treatment of a neurodegenerative disease comprising the step of administering the drug to a transgenic mouse which exhibits neurodegenerative disease characteristics, the transgenic mouse comprising a transgene, said transgene comprising a polynucleotide encoding a human tau protein operably linked to at least a portion of a regulatory region of a mouse prion gene, wherein the transgenic mouse expresses human tau protein, and wherein it is determined whether the drug at least partially abates at least one of the characteristics of the disease.

16. A method of screening for a drug that blocks hyperphosphorylation of tau comprising the step of administering the drug to a transgenic mouse, the transgenic mouse comprising a transgene, said transgene comprising a polynucleotide encoding a human tau protein operably linked to at least a portion of a regulatory region of a mouse prion gene, wherein the transgenic mouse expresses hyperphosphorylated human tau protein, and wherein it is determined whether the drug at least partially blocks hyperphosphorylation of tau in the transgenic mouse.

17. A method of screening for a drug that blocks formation of filamentous aggregates of tau comprising the step of administering the drug to a transgenic mouse, the transgenic mouse comprising a transgene, said transgene comprising a polynucleotide encoding a human tau protein operably linked to at least a portion of a regulatory region of a mouse prion gene, wherein the transgenic mouse expresses human tau protein forming filamentous aggregates, and wherein it is determined whether the drug at least partially blocks formation of filamentous aggregates of tau in the transgenic mouse.